REPORT
RB111

ONTARIO
PROVINCE OF OPPORTUNITY

PARAMETERS OF RECREATIONAL TRAVEL IN ONTARIO: A PROGRESS REPORT

DEPARTMENT OF HIGHWAYS ONTARIO CANADA

ABOUT THIS REPORT:

The project on which this report was based was carried out at the Research Branch of the Department of Highways, Ontario.

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DEPARTMENT OF HIGHWAYS, ONTARIO

PARAMETERS OF RECREATIONAL TRAVEL IN ONTARIO:

A PROGRESS REPORT

by

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Prepared for presentation at the 46th
Annual Convention of the Canadian
Good Roads Association, Saskatoon

D.H.O. REPORT NO. RB111

March, 1966

SUMMARY

In recent years recreational travel has created such severe problems on the rural highways of Ontario that strenuous efforts to relieve them have become necessary.

Research tools developed for studying other forms of traffic cannot be assumed to be directly applicable here, for the chief modes of recreational travel - by summer cottagers, campers at Provincial Parks, day-visitors at the Parks, and guests of commercial resorts - all have individual characteristics that differ markedly from each other and from those of all other types of travel. Accordingly, new tools have had to be devised.

The Ontario Department of Highways has compiled an inventory of the origins and destinations of the various kinds of recreational trips. By the use of mathematical techniques, such as regression analysis, gravity and opportunity models, and factor analysis, it has tentatively established the parameters of recreational travel in Ontario. The most important of these found so far is the exponent for distance in the gravity model. It verifies common-sense assumptions: cottagers do not care to travel too far between home and cottage; campers do not mind travelling quite a distance before reaching a Provincial Park; and guests at commercial resorts prefer to spend their holidays quite far from home.

Cartographic analysis helps to bring out the elements in the pattern that make it difficult to construct adequate simulation models for predicting future travel. Geographic location, for example, can distort distance relations. Further, demographic analysis, performed on the basis of questionnaires, suggests that prediction of the use of Ontario's recreational highways in the future may be more than usually risky.

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INTRODUCTION

Every summer weekend the highways on the outskirts of the larger cities of Ontario are clogged with motor vehicles. At border-crossing points between Ontario and the United States, on some weekends, motorists wait for hours to pass through customs. The floods of cars stream into the resort areas of the Province, and eventually new bottlenecks appear, far removed from the original ones.

These are the cars that are engaged in what is here defined as 'recreational travel', and many of the rural roads they use may be properly classified as 'recreational highways'.

Driving on recreational highways should be a pleasure. It should be possible to say of them, as the shipping lines say of sailing, that 'getting there is half the fun'. Unfortunately this is not the case. The problem of congestion on recreational highways is causing concern throughout the motoring world. The United States alone is proposing to spend over $18 billion on its recreational road program. (When it is remembered that the Interstate Highway System, the largest road-building scheme ever conceived, was intended to cost no more than two and a half times as much, then the magnitude of this program becomes clear.) David R. Levin, of the Bureau of Public Roads, has just completed a Scenic Roads and Parkway Study and has identified 132,000 miles of roads that qualify as recreational roads. Now it is proposed that existing recreational facilities, such as campsites, scenic lookout points, picnic grounds and so on be doubled or even tripled.

Similar proposals will no doubt have to be made in due time for the recreational roads in Ontario. We will need facts on which to base them, and gathering these facts and learning how to interpret them will require the devising of a whole battery of new techniques.

It is not enough simply to utilize the techniques that have been found valid for the analysis of traffic flows on urban streets and non-recreational rural highways, for these have traffic patterns that differ fundamentally from those on recreational highways (Figure 1). The latter experience top-heavy flow in one direction at the beginning of a summer weekend and in the opposite direction at the end, whereas the former have the familiar morning and evening rush hours on every working day. Use of non-recreational roads is fairly uniform throughout the year but recreational roads experience extreme peaking during the short vacation season and diseconomies

created by unused capacity in an exaggerated form throughout the rest of the year. Because the patterns are so different, the extensive research that has been performed in recent years, particularly on the journey to work, cannot be assumed to have direct application to recreational traffic. Very little research has been done anywhere - not even in the United States, for all its huge program for recreational roads - on the parameters of recreational travel. In Ontario the problem has become sufficiently pressing to merit a broad attack, using a large and varied arsenal of weapons.

In the present report three things will be done:

1. Briefly cover the procedures that have been devised or borrowed.
2. Examine some of the findings.
3. Try to see where to go from here.

PROCEDURES

The flow chart that guided this study is shown in Figure 2 and a brief outline of the various steps taken is given in Table 1.

The regional planning studies performed by the Department of Highways of Ontario take into account all the kinds of automobile trips that people make. Along with such trips as the journey to work and the shopping trip there is a category included called 'social and recreational trips'. Since this category has a very broad definition it was decided to single out for study the trips that could be specifically identified as recreational - those made on rural highways from the urban regions of Canada and the United States to the resort areas of Ontario. We concentrated on trips generated by the four modes of recreational activity that seemed to be of the greatest significance in creating peak-hour traffic problems: trips by cottagers, by campers in Provincial Parks, by day-visitors to the Parks, and by guests at commercial tourist resorts. (Only for cottagers and campers has analysis of the data progressed far enough to be reported on here.) Please note our tacit assumption (which turned out to be correct) that each mode of recreational travel should be examined separately, and will prove to have its own characteristic pattern.

No recreational travel study of such broad dimensions had ever been undertaken and at first glance the problem of gathering the essential data seemed a formidable one. It appeared even more so when the attributes of the first mode - the summer cottager - were taken into account. Ontario is exceptional in the conspicuous place that the summer cottage assumes in the cultural, political, and even physical landscape; yet it has never been known exactly how many cottages there are, where they are, or where the people who occupy them come from. If findings were to have predictive value, the questions needing answers had to go deeper:

- How did the people who spent the summer at cottages differ from those who did not?
- What was the characteristic size of the family - the number of children and their ages?
- What was the education, occupation and income of the head of the family?

- Above all, why do people go to the cottage? when? and how often?

- Assuming that the general level of education, income, etc. changes in a certain way, what effect will this have on travel to the cottage?

- What have been the past trends and what are future trends likely to be?

- Can changes in fashion be anticipated - unpredictable changes - that will invalidate all other attempts at prediction?

Finally, the question of most immediate importance to a highway department must be answered (one that we have not yet been able to give much thought to, because we are not ready); how many cars will be driven on a given stretch of highway at peak-hour by cottagers from a given resort?

It is easier to get the answers to a few of these questions for the other three modes of recreational activity under study, but not much easier.

Still, despite the apparent difficulty of the task, resources were not entirely lacking. There are all sorts of facts lying about, waiting to be used. They fill the filing cabinets of governmental agencies in Canada and the United States - federal, provincial and municipal - and in many cases have been made available in official publications, such as the national census, municipal directories, compilations of economic and demographic statistics, and various research reports. They are in the libraries and minds of university people, and again much of the material has been published, in books, papers, and theses. They are to be found in private industry and commerce. Even when not in published form, nearly all of these facts and ideas are made available, without reservation, in the most co-operative spirit.

If the facts are not in precisely the form needed, they can often be manipulated in a way that will make extraction of the relevant material possible. When even this resource fails, and there is certain information that must be had but cannot be obtained from anybody else, the researcher simply digs it up himself. Sometimes he does this by direct observation - counting the number of cars with Toronto license plates parked in a given picnic ground, for example, or making an inventory of the facilities available at a given beach. The deeply probing questions mentioned above are asked by means of carefully compiled questionnaires. Numerous, highly varied questionnaires were used, some distributed by ourselves, some, at our request, by other Departments of the Provincial Government. A typical example is shown in Appendix 'A'.

COMPONENTS OF THE TRAVEL NETWORK

Before the travel patterns characteristic of the four modes of recreational travel could be compared, it was necessary to establish a uniform classification for the components of the network on which the travel took place. Whether cottagers, campers, or guests at commercial tourist resorts, the travellers had to

start from the same urban regions and end up within the same resort areas, having meanwhile traversed the same system of highway links. Delineation of the system of links could await the beginning of the engineering analysis, but urban regions and resort areas had to be defined from the outset if the prerequisite inventory of origins and destinations was to be compiled.

Urban Regions

Where possible, urban regions were given boundaries similar to those of previously instituted transportation studies, such as those recently completed by the Department of Highways for the Niagara, Kitchener-Waterloo and London Regions, and the one at present being performed by the Metropolitan Toronto and Region Transportation Study. All in all, seventeen Urban Regions were designated, eleven in southern Ontario and six in northern Ontario. At the same time special attention was given to the seven States south of the border that supplied the bulk of recreational travellers from the United States. Rural populations were taken into consideration only where they appeared within the boundaries of urban regions. The remainder have no place in the deliberations because their influence on the patterns of recreational travel was found to be negligible.

Resort Areas of Destination

One of the besetting problems in the kind of research under discussion is that rarely is there a historical record available that will help us establish past trends. Luckily, two studies have been made that trace certain aspects of recreational travel in Ontario for 25 years. (1, 2) Since one of them was based on the other, both used the same system of subdividing Ontario into ten Resort Divisions, the Divisions into nineteen Resort Regions, and the Regions into forty-three Resort Areas. In order to avail ourselves of this material we adopted the same procedure, making only a few slight modifications. (Figure 3 illustrates the division of southern Ontario into Resort Areas.)

Inventory

We now had the necessary uniform basis for an inventory of cottagers, campers, day-visitors, and commercial guests. This inventory took the form of twelve large tables, three for each of the four modes: one giving absolute numbers of movements between origins and destinations, the second percentages by urban region of origin, the third percentages by resort area of destination. Thus, for example, it was estimated that there are 6,240 cottages in Muskoka owned by residents of the Toronto Urban Region; that these make up only 9.4 percent of all cottages owned by Torontonians throughout Ontario, but that they make up fully 69.2 percent of all the cottages in Muskoka. Table 2 shows one of the twelve inventory sheets, upon which all further analysis of origin and destination must be based.

When tables are as large as these it is not easy to visualize the patterns that lie hidden within them. At the primary level of analysis it is desirable to gain some idea of just where things are. The dot maps in Figures 4A and 4B show the distribution of summer cottages in southern and northern Ontario. Similar maps of the other modes plus maps of the distribution of urban populations and of summer-weekend traffic volumes on the network of recreational highways, when examined at the same time as these, can give a first, very rough approximation of the magnitude of the recreational-travel problem in the various parts of the Province.

At a slightly higher level, it can be seen where people come from and where they go to. These two types of patterns are presented in the form of maps showing desire lines - one set for origins and another for destinations. This technique is particularly useful in helping to visualize changes brought about by the passage of time. Figures 5A to 6B show that, although the number of cottagers desiring to leave each of the given places of origin increased enormously over the period 1941-1963, there was very little change in their directional preferences. This is remarkable in view of the great changes that took place in the intervening years in the highway network, particularly the construction of Highway 401 (the Macdonald-Cartier Freeway) which has greatly facilitated east-west movements across the southern part of the Province. Torontonians continue to prefer northern Ontario, people from Detroit and Michigan (and by extension Windsor) to stay within the southwestern part of Ontario,and people from Buffalo (and the whole Niagara region, on both sides of the border) within Niagara, whereas those from Cleveland and Ohio tend, as they have tended in the past, to disperse themselves all over the Province. Many years ago, when these patterns were first studied (3), it was suggested that the reason for their existence might be geographic: Citizens from Detroit and Buffalo have merely to cross a bridge and they are in Canada; they tend to take advantage of this propinquity by having cottages so close to their homes that they can make numerous short trips to them throughout the season. People from Cleveland must first travel east or west along the shore of Lake Erie before reaching a border crossing. Recreational commuting is usually out of the question for them, and if they have a cottage in Canada they probably stay in it for a protracted time. Consequently, they are likely to be interested in a cottage site not because it is close but because it is desirable in its own right. These patterns hold true not only for cottagers but for campers and commercial guests as well. It is not yet known what the patterns are for day-visitors at Provincial Parks, but they are certain to be of an entirely different order, for by definition day-visitors do not come to a Park for protracted stays.

Another tool used for showing directional preferences is the pie diagram, which is particularly effective when the relations between numerous origins and destinations are to be shown at the same time. Figure 7 departs from our standard procedure in that destinations for campers are not given in terms of Resort Areas but as individual Provincial Parks, of which forty-six are included. There are fourteen places of origin and accordingly six hundred and forty-four potential interrelations between individual origins and destinations - too many to be shown by desire lines. Once again it is noticeable how strongly the north attracts Torontonians. People living in southwestern Ontario tend to take full advantage of their superb endowment of Parks close to home, and similarly with the people in eastern and northern Ontario.

These points assume importance when an attempt is made to construct simulation models of recreational travel along traditional lines.

SIMULATION MODELS OF RECREATIONAL TRAVEL

Experiments were made with several types of mathematical models for simulating recreational travel, but so far results have only been obtained for one that closely approximates the gravity model. It is of the form shown in Table 3. The exponents were found by means of a computer program that transformed the equation into the multiple regression formula:

$$\text{Log } V_{ij} = \text{Log } K + p \text{ Log } P_i + c \text{ Log } C_j - d \text{ Log } D_{ij},$$

where the symbols have the meanings given in Table 3 (page 18).

Other variables have been inserted into the model, notably measures of the propensity for citizens of a given region to go camping, to own cottages, and so on, but the coefficients of correlation have been too low to encourage further experiment.

Although the coefficients for the exponents as given in Table 3 were all satisfactorily high, it cannot be pretended that any of the resulting equations give a particularly good fit. An adequately detailed interpretation of the equations would require a paper in itself - and, indeed, one is in the process of being written. Any comment made at this time on the goodness of fit between expected and observed numbers of cottagers, campers and commercial guests travelling from specific Urban Regions to specific Resort Areas would have to be so brief and oversimplified that an untrue picture would be bound to emerge. Suffice it to say that the fit is fairly good for campers, rather poor for cottagers, and intermediate for commercial guests. (By 'fairly good' I mean that, when the formula based on 1963 Park attendance was used to predict attendance in 1964, the estimate of the number of campers from Toronto attending Oastler's Lake Provincial Park was within 6 percent, and the number of campers from Hamilton attending Killbear Point Provincial Park was estimated with the same accuracy. This sounds promising, but no more than that; much more work is required before we can discuss these results with any degree of confidence.)

A number of other people have used the gravity model for predicting recreational travel of one kind and another, for example, Hyde (4) and Crampon (5). Another type of model has been developed by Ellis, who employed the methods of operations research to estimate the numbers of campers using the various highways of Michigan to go camping in the State Parks there, simulating the flow on the analogy of the flow of electricity through a network.(6, 7) His colleague, Van Doren, used the gravity model to estimate the same flows, and at the time of writing the two are about to present a comparison of their results in a joint paper. (8) Ellis is currently applying his techniques to the Provincial Parks of Ontario; ultimately it should therefore be possible to make a similar comparison between types of models here.

Opportunity Model

A serious deficiency in the data for Provincial Parks is our tacit assumption that, if a citizen of a certain Urban Region camps in a certain Park, he came directly from that Urban Region. In a great many cases - possibly even a majority of cases - this is obviously not so. The camper may be making a circuit of Parks, or he may be making a long trip and camping along the way. (The latter may be true of commercial guests also, though to a lesser extent: we have tried to eliminate all commercial resorts that cater to transient traffic, leaving only those to which people come to spend the two or three weeks of their vacation. Cottagers, I suspect, do travel directly from home to resort.)

At present there is no way of interrogating campers to learn what their travel habits throughout the summer may be. It is expected that next summer the Parks Branch of the Department of Lands and Forests will make good this deficiency, in a program that, as far as I know, will be unique: Park Rangers will distribute I. B. M. cards to a small, random sample of campers and day-visitors at the Parks, and throughout the season, every time a Park is visited or a campsite permit bought or renewed, a card will be handed in. These cards will, in effect, act as tracers through the Provincial Park system, and it will be possible to say with some assurance exactly where visitors to the Parks came from and where they went to. Certainly the exponent for distance that will ultimately be obtained will be different from the one now available.

It would seem that the opportunity model would give a more realistic result than the gravity model in this situation. Pairs of Parks located close to each other are likely to generate inter-Park traffic, and this might be expected to show up in the opportunity model. Further, in so far as the opportunity model takes into account the presence of freedom of choice, it is peculiarly well suited to simulating recreational trips - but only of a certain type. In the classification of trips by modes, as made by

1. day-visitors to Provincial Parks,
2. summer cottagers,
3. campers at Provincial Parks, and
4. guests at commercial tourist resorts,

we hypothesize that the relevance of the model has descending intensity. It should be very strong for day-trippers, and relatively weak for guests at commercial resorts. We have empirical evidence that would tend to confirm this hypothesis for the last three items (as noted earlier, results for the first are not yet available). The evidence is indirect, but it is there and can be found in a detailed examination of Table 3, as in the following section.

PARAMETERS OF RECREATIONAL TRAVEL

However imperfect the exponents listed in Table 3, they will serve as a first approximation of the parameters of recreational travel in Ontario. As such they have very great interest. They indicate that population is a fairly uniform factor throughout all three modes of recreational activity, and has similar weight

to that of resort capacity for campers and commercial guests. The very small value for resort capacity with respect to cottagers (0.35) occasions surprise, and is hard to interpret. It would seem to indicate that a large increase in the size of a cottage colony will result in only a small increase in the number of cottagers coming from a given city. One possible explanation is that most people simply do not wish to have cottages in what might be called 'urbanized summer resorts'; and indeed, there are very few such conglomerations in the Province. Evidently more thought will have to be given to this compelling problem.

Much more straightforward is the interpretation of the third and most variable exponent, that for distance. It behaves exactly (and most gratifyingly) as expected, despite the fact that little reliance can be placed on this exponent with respect to campers. Further, distances were measured in miles, because over such a vast area as Ontario it was too difficult to measure the distance in time. But, as any traffic engineer knows, it is time-distance that is the significant variable. If time-distance were substituted for space-distance it is likely that the distance exponents would assume an entirely different pattern.

However, any changes in the exponents, produced by further research are not likely to invalidate certain inferences that can legitimately be made. Thus, for cottagers, distance is an extremely important factor, because the cottage should be located as conveniently as possible (unless you are from Ohio, which is a special case). For campers it is considerably less important, and for guests at commercial resorts it might almost be expected to have an opposite effect to that for cottagers. That is, the tourist is not likely to spend his vacation at a tourist lodge close to home, but will prefer to do some travelling on the way.

The probable effects of these exponents on highway traffic show up more clearly, if indirectly, when a specific example is used (Figure 8). Assume an origin, destination and distance of unit size; e.g.,

Origin - a city of 100,000 people
Destination - a resort area containing 10,000 cottages
Provincial Parks with 10,000 campers
Tourist Lodges with accommodation for 10,000 guests
Distance - a road 100 miles long.

Then arbitrarily set the index for each mode of recreational activity at 100, which, let us say, means that 1,000 each of the 10,000 cottages, campsites and commercial accommodations are occupied by people from the given city.

Now, increase the population of the city from 100,000 to 500,000, without changing the distance or the size of the resort area. If the exponents for each mode had been 1, then there would have been 5,000 cottagers, 5,000 campers, and 5,000 guests from the city instead of 1,000, and the indices would also have become five times as great, going from 100 to 500. Since the exponents for urban population are, in fact, fairly close to 1, the indices act almost as expected, except that we get 50 percent more commercial guests than expected. This is a most interesting result, for it:

1. conforms with the results obtained by Christaller in Germany, where he worked almost entirely with commercial tourist resorts, and where he found that the bigger the city, the more likely its inhabitants to become tourists (9);

2. seems to run counter to the results obtained by Hauser in the United States, who found that the bigger the city, the less likely were the inhabitants to participate in outdoor recreation (10).

If, secondly, the size of the resort area is increased fivefold and the other two elements are left unchanged, then campers and commercial guests increase to about the same extent, but cottagers number only twice as many instead of five times as many. This would seem to indicate that campers care very little about the size of a Provincial Park and guests at commercial resorts slightly prefer a large resort to a small one, whereas cottagers do not, as was noted earlier.

Finally, if the distance is increased fivefold and the other variables remain unchanged, an exponent of 1 would result in a fivefold decrease in numbers; that is, each index would now be 20 instead of 100. As we have already seen, cottagers are very adversely affected by increasing distance (with an index of 3 instead of 20); campers quite adversely; and commercial guests favorably.

FALLIBILITY OF MATHEMATICAL MODELS

Several ways in which simulation models of recreational travel are necessarily fallible have already been noted. There are others. Consider, for example, the situation shown diagramatically in Figure 9. Assume a cottage colony of a certain size on a lake very near to a large city. A process takes place with respect to that colony which is very similar to the process affecting small nearby towns. It becomes engulfed, but in a special way. If it is very near, it loses its character as a summer resort, and becomes indistinguishable from the rest of the metropolitan area. If there remains a large enough rural buffer between resort and city, then the colony retains its character, but almost all the cottages become occupied by inhabitants of the large city. Briefly, the resort becomes a summer dormitory of the city. Would-be cottagers from a smaller city are in effect rebuffed. Here neither distance, size nor capacity will play its true role in any simulation model. This, however, is a special case.

A large city also has a more generalized effect (Figure 10), which may conceivably be amenable to mathematical treatment. The strong jet of travel emanating from the large central city profoundly affects the streams emanating from all other central places nearby. The people from Toronto and its neighbours are attracted by the north, but only in the central part of Toronto does the purely northward movement predominate. Movement from the western part of the city is towards the northwest; from the eastern part towards the northeast. Traffic generated within the parts of the city seems to act as a barrier to other traffic wishing to cross it. The extreme case in the eastern part of Toronto can be attributed to an extraneous factor - the very convenient access to Haliburton and the Kawartha Lakes northeast of the city.

GEOGRAPHIC INTERPRETATIONS

Finally, certain elements causing fallibility in mathematical models show up only after their distribution is plotted on a map. Earlier the propensity of the inhabitants of the urban region to own a cottage, go camping, or visit a commercial tourist resort was mentioned. This propensity can be expressed in various ways: If the data are sufficiently reliable, as with ownership of summer cottages (on the whole, one family will own no more than one cottage), it can be said that such and such a percentage of the population of a given city own cottages (Figure 11). If not, as with campers at Provincial Parks (for at present it is not known how many times each camper has been counted, how many Parks he visited, or how many times he visited each Park), then cities can be categorized in terms of an index, the city with the higher proportion of campers, in terms of city population, having the higher index (Figure 12).

Figure 11 shows a most interesting distribution. Note first that only those cottages having hydro-electric service have been considered. This is done on the assumption that twenty years hence hydro lines will have entered resort areas that are not yet served, and that for this reason comparison of our geographical interpretations for current and future conditions will be more valid if only cottages with hydro are analyzed. In any case, the data received from the Hydro-Electric Commission are by far the most reliable obtained on cottagers. The broken line showing the edge of the Precambrian Shield plays a powerful role here. On the Shield itself as many as thirty-two families in a hundred own cottages - whether to live in or rent to others we do not know, but they own them. Just off the edge of the Shield, in Midland, Orillia, Kingston, and so on, 10 to 16 percent of the families own cottages. The one important exception is Ottawa, and it is not really an exception. A large proportion of the civil servants in Ottawa own cottages in Quebec, along the Gatineau and on Meach Lake. It would be interesting to hazard a guess, on the basis of this map, as to how many cottagers from Ottawa will be found in Quebec. My own guess is that there will be enough to bring Ottawa's percentage up to around 15 percent from its present 5 percent. Relatively far though Toronto is from the more desirable resort lands, it has the high proportion of nearly 10 percent of its citizens owning cottages served by Hydro. This may reflect the long tradition of cottage ownership characteristic of the city. The Niagara Peninsula, on the other hand, is at the very bottom of the scale. Here the element of time friction may be evident, as well as the pull of the American border. This pull seems to be effective in Sarnia also, but less so in Windsor.

Most interesting are the complex of cities in the interior of southwestern Ontario. With few exceptions, they will be found in the remarkably narrow range of 4.0 to 4.8 percent. Factor analysis will no doubt bring to light the underlying causes for this striking uniformity.

The geographic inferences to be drawn from Figure 12 are entirely different; there are none - at least none that I can make. No pattern of any kind seems to be evident. A probable reason for this chaotic state has been suggested*: Camping may be such a relatively new phenomenon, and in such a state of flux, that no pattern has had time to emerge. This could very well be the explanation. The habit of cottage ownership has been

* Personal communication from Mr. A. J. Freedman, of DeLeuw, Cather Co. Ltd.

firmly established in Ontario for nearly a century; that of camping in Provincial Parks is a post-World-War-II phenomenon,and, indeed, the number of Parks is growing at a prodigious rate. We may be establishing a historical record that researchers 50 years hence will find useful. By then a pattern may be discernible.

No map is provided for the proportion of inhabitants of each city who become guests at commercial resorts. No map is necessary: in almost every case the figure hovers close to 20 percent. What now happens to the inference made on the basis of our parameters, that the larger the city, the more likely people are to visit commercial tourist resorts? Again the fallibility of mathematical simulation becomes evident.

PRELIMINARY CONCLUSION

One conclusion can be stated with justification: There is no such entity as recreational travel. To gain a just idea of how our recreational highways are used, the stream of recreational travel on those highways must be broken down into its component parts, and each part studied separately. Even that is only the beginning.

DEMOGRAPHIC ANALYSIS

The proper planning of a road must include more than an examination of its direct needs. It is not enough to know that the present traffic demand between points A and B is 20,000 vehicles per day. Knowledge must be gained as to why the demand exists in the first place, and has that particular magnitude. What is there about A and about B that is generating this traffic? How will the elements affecting this demand change, and when will the change have achieved such proportions as to necessitate a corresponding change in the road linking A and B?

Thus, in the present study, determining approximately how many cottagers, campers and so on there were; where they lived and where they vacationed; how important a segment of the population, in each city, owned cottages or went camping - all this was just a beginning. The next step was to discover two different things:

1. What were the attributes of the resort areas that made them attractive to cottagers and campers - so attractive, sometimes, that other, nearer areas were overlooked in their favour?

2. In what way did people participating in one kind of recreational activity differ from those participating in another? How old were they, how well educated, how well off, what kind of jobs did they have?

So far much more time has been spent in searching for answers to the second set of questions than to the first, though steps have been taken towards devising indices of attraction for the various types of recreational areas. It may prove necessary to work backwards: In what way do Parks give unexpected results when simulation models are used? The ' unexpectedness quotient' may be turned into an index of attraction. For example, if one Park attracts twice as many people as one would expect from the model, its index is 200; if another attracts half as many,

its index is 50. But there may be a complication: the same Park may have an index of 200 for city A, 500 for city B, and 30 for city C. Obviously, there is room for a considerable amount of interesting and worthwhile research here.

In looking for answers to the second set of questions, field parties visited the resort areas of Ontario in the summers of 1964 and 1965, asking people to fill in questionnaires dealing with the habits of cottagers and commercial guests. The Parks Branch of the Department of Lands and Forests had similar questionnaires filled in by campers and day-visitors in its Provincial Parks.

The questionnaires submitted to commercial guests in 1964 are in the process of being analyzed, and the results will be published in a separate report*. I might mention, however, that the use of factor analysis has produced several thought-provoking insights, which will stimulate further research. The questionnaires submitted to cottagers in 1965 are now being readied for factor analysis.

Once the answers to both sets of questions mentioned above, have been obtained it may be possible to make a few guesses about the future - or it may not. For consider: let us assume that the information gained from the Parks Branch questionnaire on campers, and summarized in Figure 13, is valid. It reveals that, on the whole, campers are younger, better educated and paid, and with more responsible jobs than the population they come from. If a guess is made for 20 years hence that the population as a whole will be younger, better educated and paid, and with more responsible jobs than today, does this mean that the number of campers will increase faster than the total number of people? That is exactly what has been happening over the last 20 years, and right now the guess is that it will continue happening over the next 20 years. But even aside from any considerations about the fallibility of human prophecy - we may have war or depression, or people may have fewer children, so that each of the fundamental presuppositions is found to be wrong - even if these are predicted with absolute accuracy, how can one be sure that camping itself will remain in favour? How are we to take into account increased congestion in popular Parks? Or a shift away from travel within Ontario, towards travel to Europe or Asia or, for that matter, Antarctica? Turning to prediction about cottagers, how can we be sure that people will not get fed up with being tied down to one spot for their summer vacations, with a resulting rash of foresaken cottages?

How, finally, shall we take into account the results of our own efforts, the dangers of self-fulfilling prophecy? We have seen how very different in magnitude are the exponents for distance characteristic of cottagers, campers, and commercial guests. And it has been pointed out that if our distances had been measured in time the exponents might have assumed an entirely different pattern. This becomes of very great importance when one recreational highway is relegated to insignificance by construction of another nearby, of similar length but much higher standard, so that, while the space distance remains substantially the same, the time distance has been materially shortened. It would probably be found that over a period of time the whole recreational mix of the resort areas served by the highway had been changed.

* The work is being performed by Mr. G. David Boggs, a graduate student in Geography at the University of Western Ontario.

A final point: It is extremely likely that the patterns of highway use are markedly different for cottagers, campers, day-visitors, and commercial guests. If this proves to be true, it is easy to see how complex the problem becomes of predicting the effect of a new highway on traffic patterns. The mix will be different, the traffic patterns will be different.

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TABLE 1, RECREATIONAL TRAVEL STUDY OUTLINE

INPUT

1. DATA GATHERED IN FIELD

   a) BY OBSERVATION
   b) THROUGH QUESTIONNAIRES

2. DATA GATHERED FROM OTHER SOURCES

   a) PROVINCIAL DEPARTMENTS
   b) HYDRO-ELECTRIC POWER COMMISSION
   c) FEDERAL DEPARTMENTS
   d) UNIVERSITIES
   e) COMMERCIAL SOURCES

3. CLASSIFICATION OF DATA

   BY MODES:
   - COTTAGERS
   - CAMPERS
   - DAY VISITORS
   - COMMERCIAL GUESTS

   BY COMPONENTS:
   - URBAN AREAS OF ORIGIN
   - HIGHWAY LINKS
   - RESORT AREAS OF DESTINATION

ANALYSIS

1. MATHEMATICAL

   a) STATISTICS
      - REGRESSION ANALYSIS
      - FACTOR ANALYSIS

   b) SIMULATION MODELS
      - GRAVITY MODEL
      - OPORTUNITY MODEL
      - FLOW THEORY (ELECTRICAL ANALOGUE)

   c) GEOGRAPHIC THEORY & REGIONAL SCIENCE
      - CENTRAL PLACE THEORY
      - GRAPH THEORY

   d) TRAFFIC ENGINEERING

2. CARTOGRAPHIC

   a) DENSITY MAPS
   b) DISTRIBUTION MAPS
   c) FLOW CHARTS
   d) FREQUENCY GRAPHS

3. INTUITIVE

   a) FEET-ON-THE-DESK ANALYSIS

OUTPUT

1. PARAMETERS OF RECREATION TRAVEL IN ONTARIO
2. INSIGHTS INTO MEANINGS OF OBSERVED PATTERNS
3. TOOLS FOR PREDICTING FUTURE TRAFFIC FLOW ON RECREATIONAL HIGHWAYS
4. NEW PROBLEMS REQUIRING FURTHER RESEARCH

TABLE 2, ORIGIN OF GUESTS AT COMMERCIAL RESORTS OF ONTARIO, 1964

PRECAMBRIAN SHIELD

DESTINATION				CANADA																UNITED STATES									REST OF WORLD	TOTAL
RESORT DIVISION	RESORT REGION		RESORT AREA	URBAN REGIONS OF ONTARIO												REST OF ONTARIO	ONTARIO	PROVINCES EAST of ONT.	PROVINCES WEST of ONT.	CANADA	N.Y.	MICH.	OHIO	PA	MINN	WISC.	ILL	REST OF U.S.	U.S.		
				TORONTO	HAMILTON	NIAGARA	KITCHENER	LONDON	WINDSOR	PETER-BOROUGH	OTTAWA	NORTH BAY	SUDBURY	SAULT STE MARIE	LAKEHEAD																
I NORTHERN ONTARIO	A	NORTHWESTERN ONTARIO	1 KENORA	2,310		320			530		1,250					9,020	13,430	1,570	24,550	39,550	1,380	2,100	2,200	420	14,800	7,130	11,750	25,070	64,830	420	104,900
			2 RAINY LAKE													790	790	40	870	1,700	40	340	200		2,630	1,170	2,330	3,980	10,690	10	12,400
			3 DRYDEN AND SIOUX LOOKOUT													10,460	10,460	1,470	8,290	20,220	700	1,790	2,090	310	7,290	6,740	16,350	21,930	57,200	80	77,500
			4 LAKEHEAD AND W. LAKE SUPERIOR	3,270	530	70	270	600	130	130	1,890					7,650	14,540	1,330	7,870	23,740	670	6,870	1,530		11,140	7,340	4,670	10,740	42,960		66,700
	SUBTOTAL			5,580	530	390	270	600	660	130	3,140					27,920	39,220	4,410	41,580	85,210	2,770	11,100	6,020	730	35,960	22,380	35,100	61,720	175,780	510	261,500
	B	E. LAKE SUPERIOR AND NORTH SHORE LAKE HURON	5 ALGOMA	5,880	1,390	320	640	1,070	2,670	210	430	110	2,780	1,710		6,310	23,520	1,070	850	25,440	1,800	37,420	28,730	1,070	750	1,390	6,620	5,770	81,350	110	106,900
			6 SUDBURY	1,380	340	160	180	250	480	70	50	20	590	200	40	670	4,430	140	400	4,970	450	7,350	5,330	470	160	810	1,670	1,370	17,610	20	22,600
			7 MANITOULIN	3,360	810	110	740	630	790		70	90	610	330		770	8,310	50		8,360	260	4,050	7,530	930		470		1,700	14,940		23,300
	SUBTOTAL			10,620	2,540	590	1,560	1950	3,940	280	550	220	3,980	2,240	40	7,750	36,260	1,260	1,250	38,770	2,310	48,820	39,590	2,470	910	2,670	8,290	8,840	113,900	130	152,800
	C	NORTHEASTERN ONTARIO	8 PORCUPINE	2,350	830	440	310	450	360	50	130	150	120	10	30	930	6,160	180	30	6,370	970	490	3,290	1,440				710	6,900	30	13,300
	D	FRENCH RIVER AND LAKE NIPISSING	9 FRENCH RIVER AND LAKE NIPISSING	16,190	5,710	2,940	2,520	4,700	3,610	590	590	820	1,340			6,630	45,640	3,190	1,510	50,340	5,710	3,940	12,250	5,200				6,290	33,390	170	83,900
	TOTAL			34,740	9,610	4,360	4,660	7,700	8,570	1,050	4,410	1,190	5,440	2,250	70	43,230	127,280	9,040	44,370	180,690	11,760	64,350	61,150	9,840	36,870	25,050	43,390	77,560	329,970	840	511,500
II HURON-OTTAWA TRACT	E	30,000 ISLANDS OF GEORGIAN BAY	10 30,000 ISLANDS OF GEORGIAN BAY	4,810	2020	500	920	890	830	80	40					650	10,740	140	80	10,960	2,500	850	3,790	1,540			170	950	9,400	40	20,800
			11 PARRY SOUND W	9190	3000	880	1,290	800	1,400	300						580	17,440	130		17,570	2 700	1,430	2,120	2,810				870	9,930		27,500
	F	PARRY SOUND AND MUSKOKA	12 PARRY SOUND E	11,850	3,840	3,310	1,160	1,520	1,090	160	170					1,330	24,530	170	60	24,760	1,590	890	3,510	1,190				130	8,310	30	33,100
			13 MUSKOKA 2)	43,620	8,650	2,230	3,260	2,700	2,510	280	560					8,730	72,540	1,020	280	73,840	6,230	2 700	5,020	3,260				1,760	18,970	190	93,000
			14 LAKE OF BAYS	28,510	6,540	2,180	2,950	2,770	2,770	190	1,240					1,560	48,710	650	230	49,590	3,830	1,410	1,770	770				060	8,840	470	58,900
	SUBTOTAL			93,170	22,.30	8,600	8,660	7,790	7,770	930	1,970					12,200	163,220	1,970	570	165,760	14,350	6,430	12,420	8,030				4,820	46,050	690	212,500
	G	HALIBURTON AND ALGONQUIN PARK	15 HALIBURTON	40,450	4,900	4,540	3,630	2,990	2,270	900	1,090					9,610	70,380	820	180	71,380	10,070	1,820	4,710	1,900				640	19,140	180	90,700
			16 ALGONQUIN PARK	3,190	420	360	300	260	210	110	810					1,270	6,920	350	30	7,300	980	170	500	410				120	2,180	20	9,500
	SUBTOTAL			43,640	5,320	4,900	3,930	3,240	2,480	,010	1,900					10,880	77,300	1,170	210	78,680	11,050	1,990	5,210	2,310				760	21,320	200	100,200
	TOTAL			141,620	29,470	14,000	13,510	11,920	11,080	2,020	3,910					23,730	251,260	3,280	860	255,400	27,900	9,270	21,420	11,880			170	6,530	77,170	930	333,500
III FRONTENAC AXIS	H	LAKELAND OF RENFREW	17 & 44 LAKELAND OF RENFREW	33,610	5,830	3,140	3,440	2,840	3,840	900	13,880					25,400	91,880	9,710	600	102,190	14,190	2,390	8,070	9,860				12,400	46,910	300	149,400
	I	RIDEAU LAKES & 1,000 ISLANDS	18 RIDEAU LAKES AND 1,000 ISLANDS	7,830	780	200	690	290	200	200	3,040					5,590	18,820	1,860	290	20,970	32,340	1,370	3,920	30,280				8,920	76,830	200	98,000
	TOTAL			41,440	6,610	3,340	4,130	3,130	3,040	1,100	16,920					30,990	110,700	11,570	890	123,160	46,530	3,760	11,990	40,140				21,320	123,740	500	247,400
I - III TOTAL THE SHIELD				217,800	45,690	21,700	22,300	22,750	22,690	4,170	25,240	1,190	5,440	2,250	70	97,950	489,240	23,860	46,120	559,250	86,190	77,380	94,560	61,860	36,870	25,050	43,560	106,450	530,880	2,270	1,092,400

CONTINUED NEXT PAGE

TABLE 2, ORIGIN OF GUESTS AT COMMERCIAL RESORTS OF ONTARIO, 1964 (CONTINUED)

PENINSULAR ONTARIO

IV OTTAWA AND ST. LAWRENCE	J	ENVIRONS OF OTTAWA	19	OTTAWA	1,820	380	150	250	340	190	40	160					1,270	4,600	1,820	180	6,600	2,820	370	410	2,490				920	7,010	90	13,700
	K	EASTERN ONTARIO	20 & 45	EASTERN ONTARIO	18,150	4,660	1,940	2,820	4,560	2,430	870	2,140					9,020	46,590	11,250	1,170	59,010	13,780	3,780	1,940	6,210				11,990	37,700	290	97,000
	TOTAL				19,970	5,040	2,090	3,070	4,900	2,620	910	2,300					10,290	51,190	13,070	1,350	65,610	16,600	4,150	2,350	8,700				12,910	44,710	380	110,900
V SOUTH CENTRAL ONTARIO	L	EASTERN LAKES	21	E. LAKE ONTARIO	7,000	1,200	490	560	830	260	90	430					3,350	14,210	2,150	90	16,450	6,580	860	1,570	1,030				2,060	12,100	50	28,600
			22	RICE LAKE	4,170	330	320	130	110	80	30	60					110	5,340	100	20	5,460	1,330	580	5,700	1,620				1,510	10,740		18,200
			23	KAWARTHA	29,650	5,960	1,510	1,180	670	420	760	340					840	41,330	500	80	41,910	10,160	1,600	22,760	5,380				1,930	41,830	260	84,000
		SUBTOTAL			40,820	7,490	2,320	1,870	1,610	760	880	830					4,300	60,880	2,750	190	63,820	18,070	3,040	30,030	8,030				5,500	64,670	310	128,800
	M	TORONTO	25	LAKE SCUGOG	1,100	150	120	30	120	130	10	50					220	1,930	50	20	2,000											2,000
			26	LAKE ONTARIO E. TO COBURG	8,210	1,010	820	510	150	460	40						250	11,450			11,450	1,840	820	6,230	760					9,650		21,100
			28	TORONTO UMLAND	870	120	40	140	180	380	70	100					870	2,770	280	110	3,160	160	150	120	110				280	820	20	4,000
			29	LAKE SIMCOE 3)	20,860	2,830	760	1,990	1,680	840	150						1,110	30,220	880	530	31,630	1,180	2,140	1,870	730				650	6,570		38,200
			30	LAKE COUCHICHING	3,210	260	120	260	80	290	10	0					190	4,370	20		4,390	1,180	390	1,380	1,640				320	4,910	200	9,500
		SUBTOTAL			34,250	4,370	1,860	2,870	2,210	2,100	280	160					2,640	50,740	1,230	660	52,630	4,360	3,500	9,600	3,240				1,250	21,950	220	74,800
	TOTAL				75,070	11,860	4,180	4,740	3,820	2,860	1,160	990					6,940	111,620	3,980	850	116,450	22,430	6,540	39,630	11,270				6,750	86,620	530	203,600
VII GEORGIAN BAY SOUTH	O	GEORGIAN BAY SOUTH	32	S.E. WAUBAUSHENE TO COLLINGWOOD 4)	55,020	8,290	1,780	5,770	3,360	1,680	310	530					6,320	83,060			83,060	7,880	2,520	2,410	840				8,290	21,940		105,000
			33	SW COLLINGWOOD TO OWEN SOUND	800	110	70	190	130	90		10					150	1,550	40		1,590	20	240	30	40				70	400	10	2,000
	TOTAL				55,820	8,400	1,850	5,960	3,490	1,770	310	540					6,470	84,610	40		84,650	7,900	2,760	2,440	880				8,360	22,340	10	107,000
VIII RESORTS OF SOUTHWESTERN URBAN COMPLEX	P	BRUCE PENINSULA	34	BRUCE PENINSULA	7,010	2,690	910	3,590	2,540	4,090	130	50					580	21,590	360		21,950	360	2,000	840					230	3,430	20	25,400
	Q	LAKE HURON SOUTH	35	SOUTHAMPTON TO GODERICH	7,340	4,040	1,160	3,920	5,260	3,920	60						340	26,040	310	30	26,380	460	2,840	430					370	4,100	120	30,600
			36	GODERICH TO SARNIA	4,630	1,920	790	1,850	6,550	5,500	70	170					890	22,370	700	100	23,170	170	7,780	660	160				1,160	9,930		33,100
		SUBTOTAL			11,970	5,960	1,950	5,770	11,810	9,420	130	170					1,230	48,410	1,010	130	49.550	630	10,620	1,090	160				1,530	14,030	120	63,700
	R	CENTRAL LAKE ERIE	37	CENTRAL LAKE ERIE	520	1,050	280	120	460	860		120					430	3,840	660	200	4,700	760	1,930	5,820	200				3,140	11,850	50	16,600
	S	INLAND S.W. ONTARIO	38 & 46	INLAND S W ONTARIO	1,300	170	140	250	450	540	100	150					820	3,920	370	150	4,440	240	690	200	120				600	1,850	10	6,300
	TOTAL				20,800	9,870	3,280	9,730	15,260	14,910	360	490					3,060	77.760	2,400	480	80,640	1,990	15,240	7,850	480				5,500	31,160	200	112,000
IX "THE TOE"	T	SOUTHWEST CORNER OF ONTARIO	39	ST. CLAIR RIVER	70				120	60							30	280			280	10	20						90	120		400
			40	WINDSOR AREA	150	220		220		1,850							70	2,510	40		2,550	40	13,140	2,070					660	15,910	40	18.500
			41	WESTERN LAKE ERIE	1,870	360	320	340	680	850	70	30					930	5.450	390	20	5,860	1,050	2,790	1,980	480				5,520	11,820	120	17,800
	TOTAL				2,090	580	320	560	800	2,760	70	30					1,030	8,240	430	20	8,690	1,100	15,950	4,050	480				6,270	27,850	160	36.700
X NIAGARA PENINSULA	U	EASTERN LAKE ERIE	42	EASTERN LAKE ERIE	550	2,520	2,400		280	280		560						6,590			6,590	6,290	3,290		1,710				3,520	14,810		21,400
	V	NIAGARA RIVER & LAKE ONTARIO	43	NIAGARA RIVER & LAKE ONTARIO	1,770	170	220	330	990	2,150	50	330					1,600	7,610	2,270	440	10,320	6,400	9,940	8,450	6,290				13,360	44,440	440	55.200
	TOTAL				2,320	2.690	2,620	330	1,270	2,430	50	890					1,600	14,200	2,270	440	16,910	12,690	13,230	8,450	8.000				16.880	59.250	440	76.600
TOTAL: PENINSULAR ONTARIO					176,070	38,440	14,340	24,390	29,540	27,350	2,860	5,240					29,390	347,620	22,190	3,140	372,950	62,710	57,870	64,870	29,810				56,670	2[illegible]1,930	1,720	646,600
GRAND TOTAL					393,870	84,130	36,040	46,690	52,290	50,040	7,030	30,480	1,190	5,440	2,250	79	127,340	836,860	46.080	49,260	932,200	148900	135,250	159,430	91,670	36,870	25,050	43,560	62,120	802.810	3.990	739,000

TABLE 3, PARAMETERS OF RECREATIONAL TRAVEL IN ONTARIO, 1964

	p	c	d
COTTAGERS	1·02	0·35	2·22
CAMPERS	1·12	1·03	1·45
COMMERCIAL GUESTS	1·17	1·10	0·95

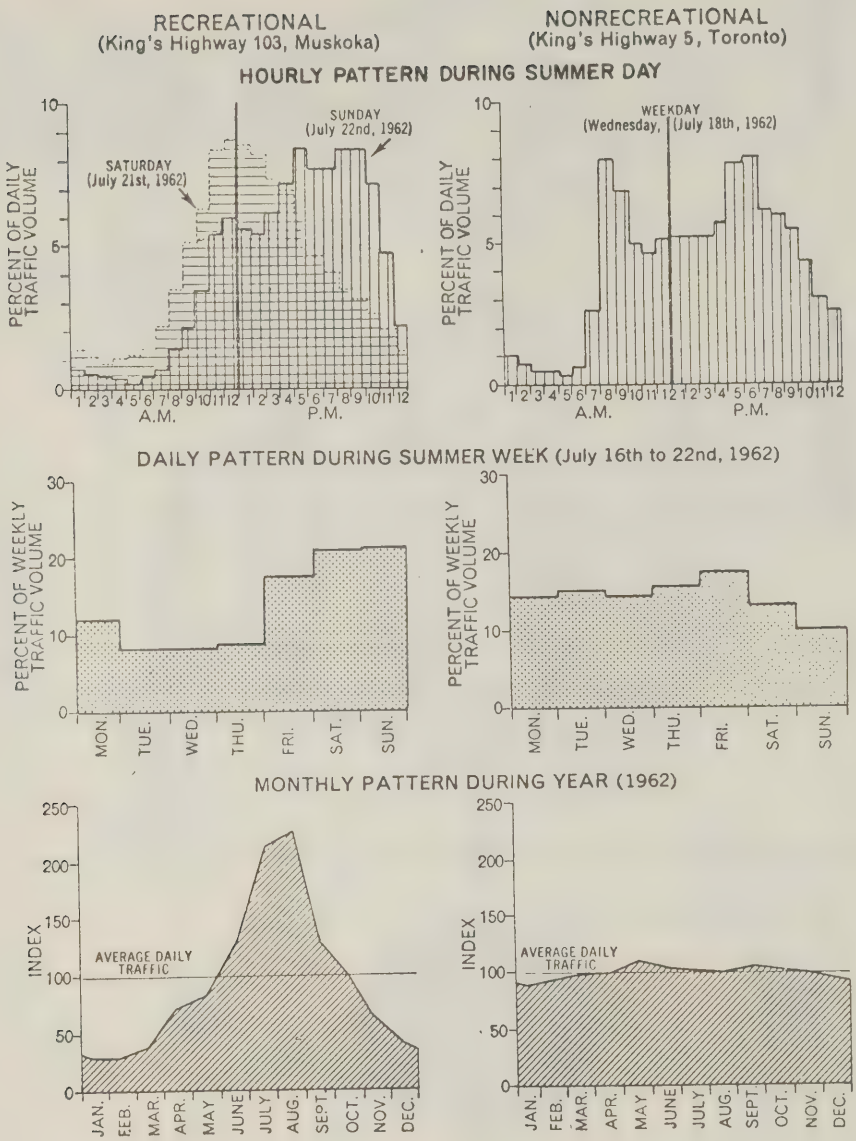
EXPONENTS FOR THE FORMULA $V_{ij} = K \frac{P_i^p \, C_j^c}{D_{ij}^d}$

Where V_{ij} = Vacationists traveling from Urban Region i to Resort Area j

P_i = Population of Urban Region i

C_j = Capacity of Resort Area j

D_{ij} = Distance (in miles) between i and j



From Geographical Review, Vol. 54, No.2(1964), p.222.

FIG. 1, TRAFFIC PATTERNS ON A RECREATIONAL AND ON A NONRECREATIONAL HIGHWAY

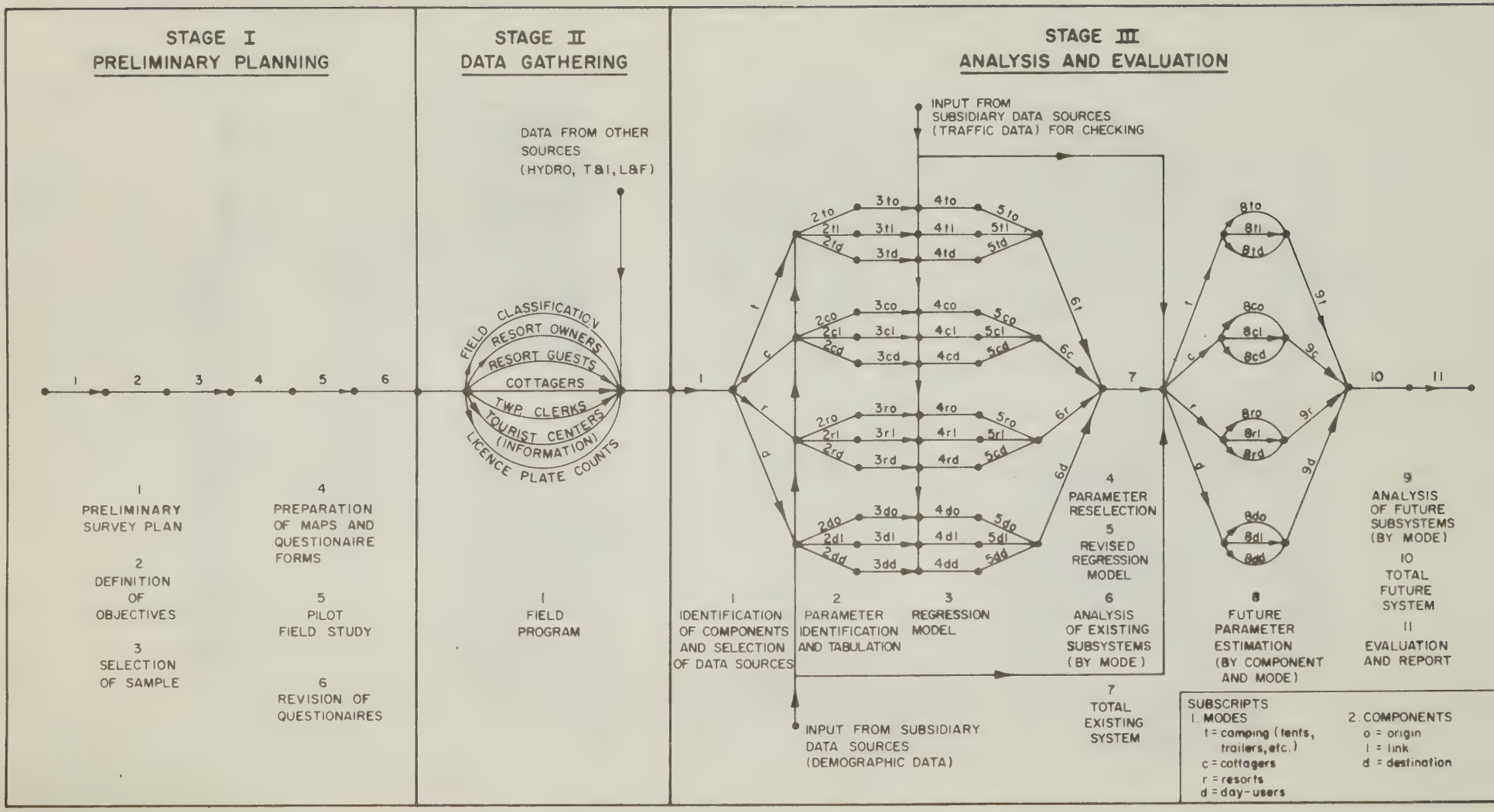
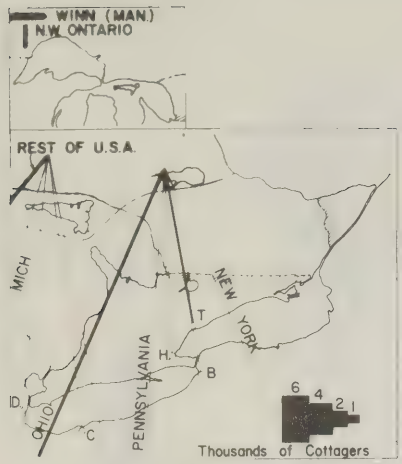


FIG. 2, PREDICTION OF RECREATIONAL TRAVEL IN ONTARIO

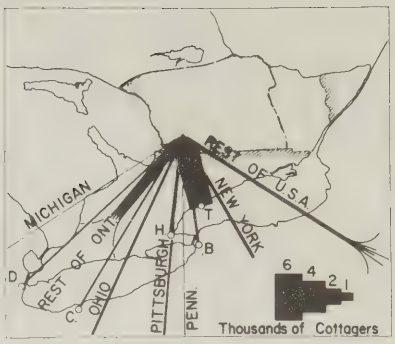
FIG. 3, RESORT AREAS ADAPTED TO TOWNSHIP BOUNDARIES, SOUTHERN ONTARIO

FIG. 4A, DISTRIBUTION OF SUMMER COTTAGES IN SOUTHERN ONTARIO, 1963

FIG. 4B, DISTRIBUTION OF SUMMER COTTAGES IN NORTHERN ONTARIO, 1963



DIVISION I



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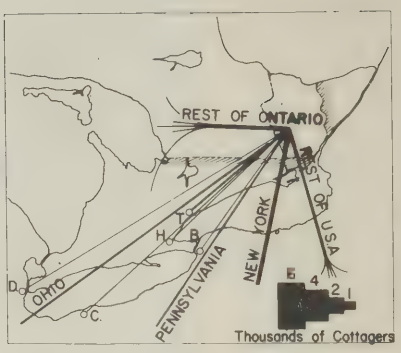
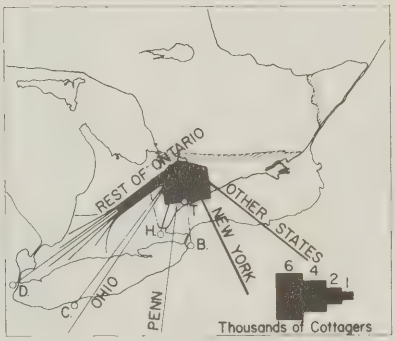
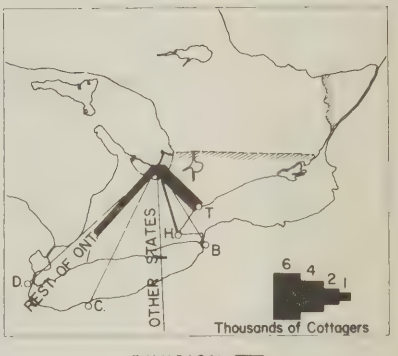


DIVISION III

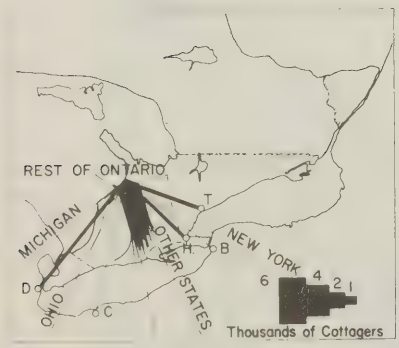
DIVISION IV



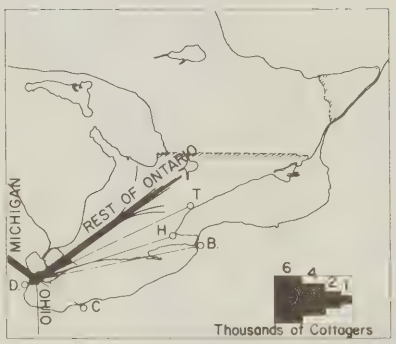
DIVISION V



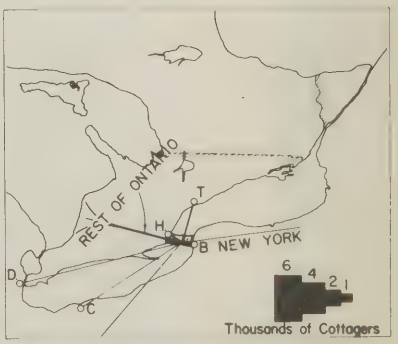
DIVISION VII



DIVISION VIII

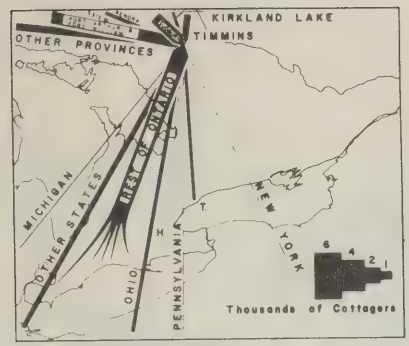


DIVISION IX

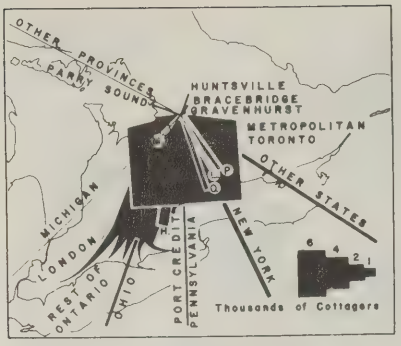


DIVISION X

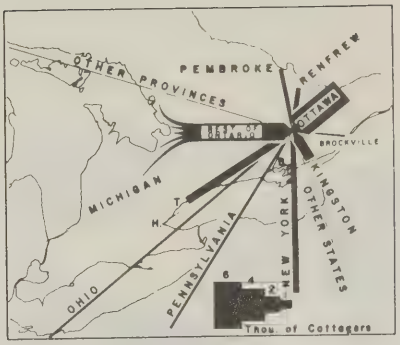
FIG. 5A, ORIGIN OF COTTAGERS IN THE MAJOR RECREATIONAL DIVISIONS OF ONTARIO - 1941



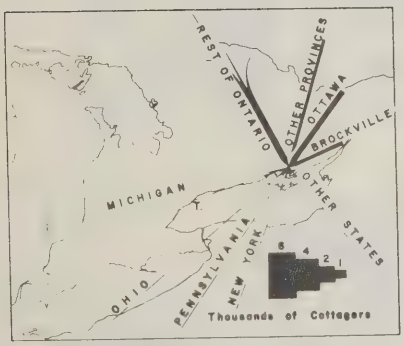
DIVISION I



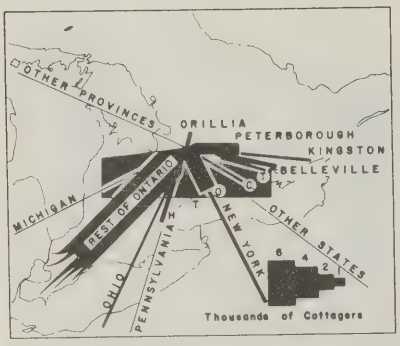
DIVISION II



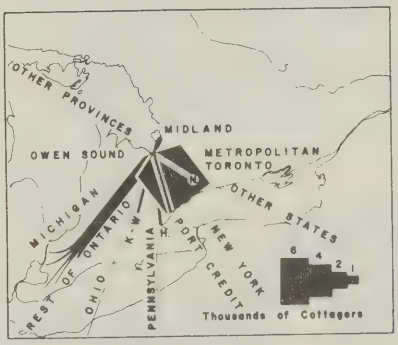
DIVISION III



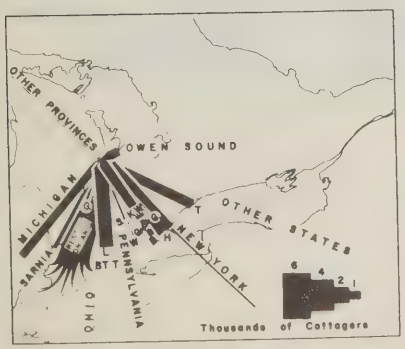
DIVISION IV



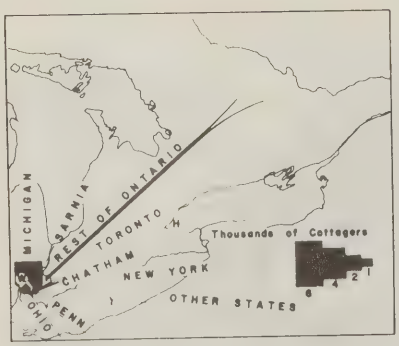
DIVISION V



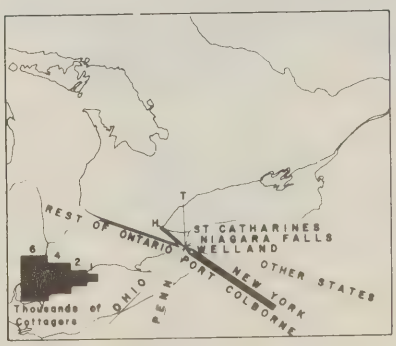
DIVISION VII



DIVISION VIII

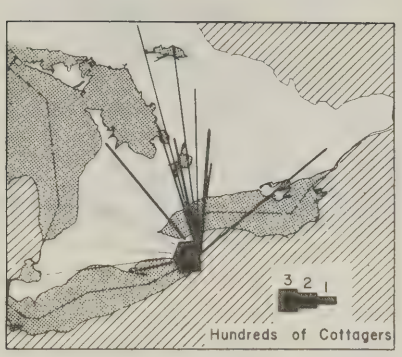


DIVISION IX

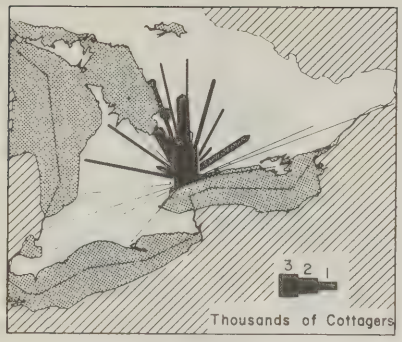


DIVISION X

FIG. 5B, ORIGIN OF COTTAGERS IN THE MAJOR RECREATIONAL DIVISIONS OF ONTARIO - 1963

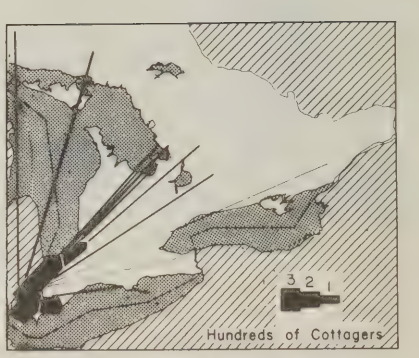


BUFFALO

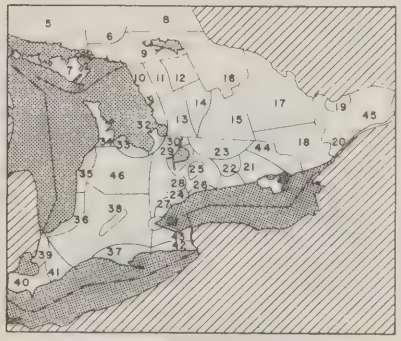


TORONTO

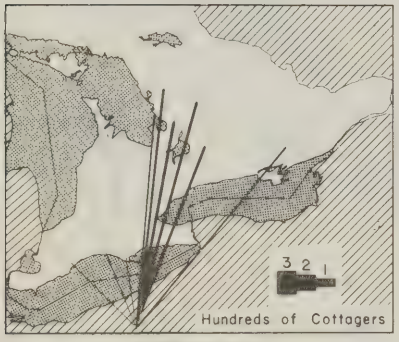
NOTE
The Scale for Toronto is One-tenth of That Used for Other Cities



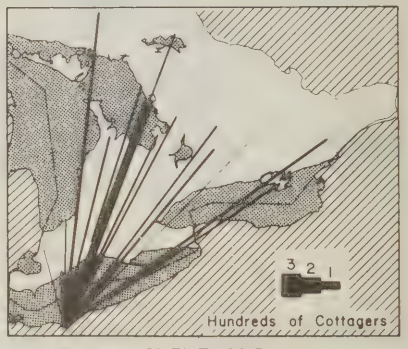
DETROIT



KEY MAP OF RESORT AREAS
FOR RESORT NAMES REFER TO FIG. 3

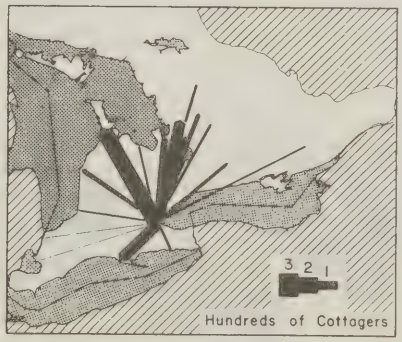


PITTSBURGH



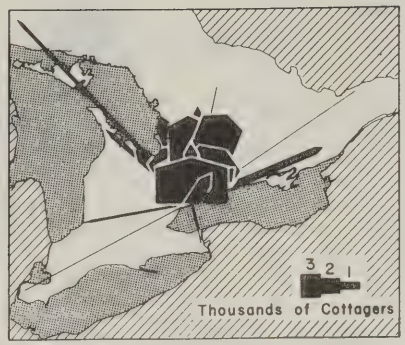
CLEVELAND

SOURCE: CANADA POST OFFICE NAMES & ADDRESSES OF OWNERS OF SUMMER COTTAGES. PROVINCE OF ONTARIO. 1945 ISSUE

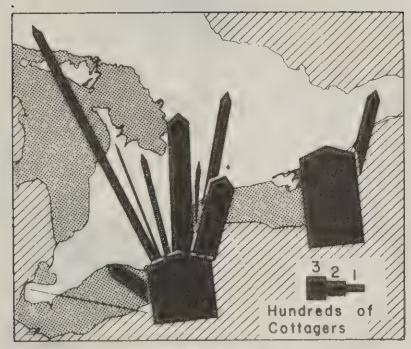


HAMILTON

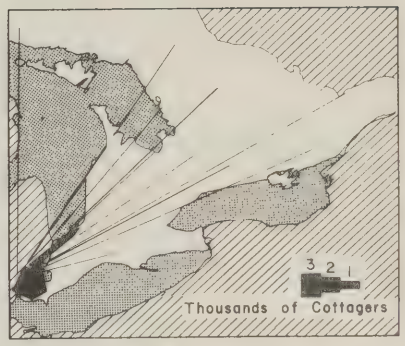
FIG. 6A, DESTINATION OF COTTAGERS FROM MAJOR PLACES OF ORIGIN - 1941



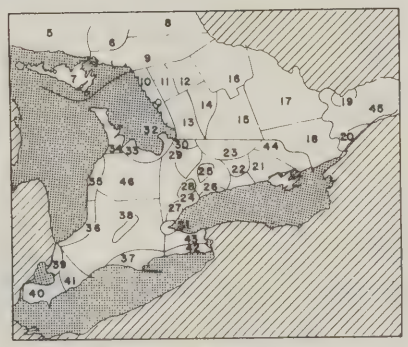
TORONTO



NEW YORK

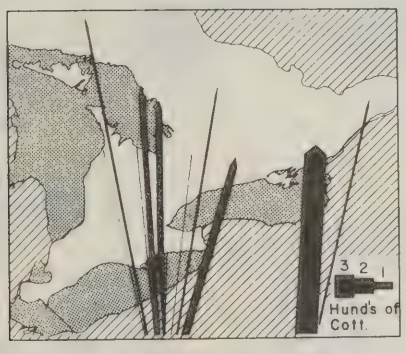


MICHIGAN

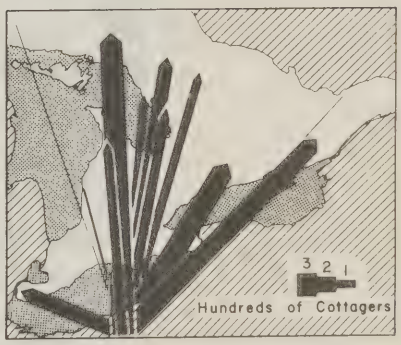


KEY MAP OF RESORT AREAS

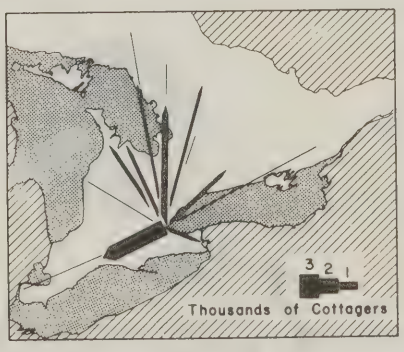
FOR RESORT NAMES REFER TO FIG. 3



PENNSYLVANIA



OHIO



HAMILTON

* INCLUDES ONLY THOSE HAVING HYDRO SERVICE.

NOTE: The Scale For Toronto, Hamilton & Michigan is one-tenth of That Used For Other Areas.

FIG. 6B, DESTINATION OF COTTAGERS FROM MAJOR PLACES OF ORIGIN - 1963

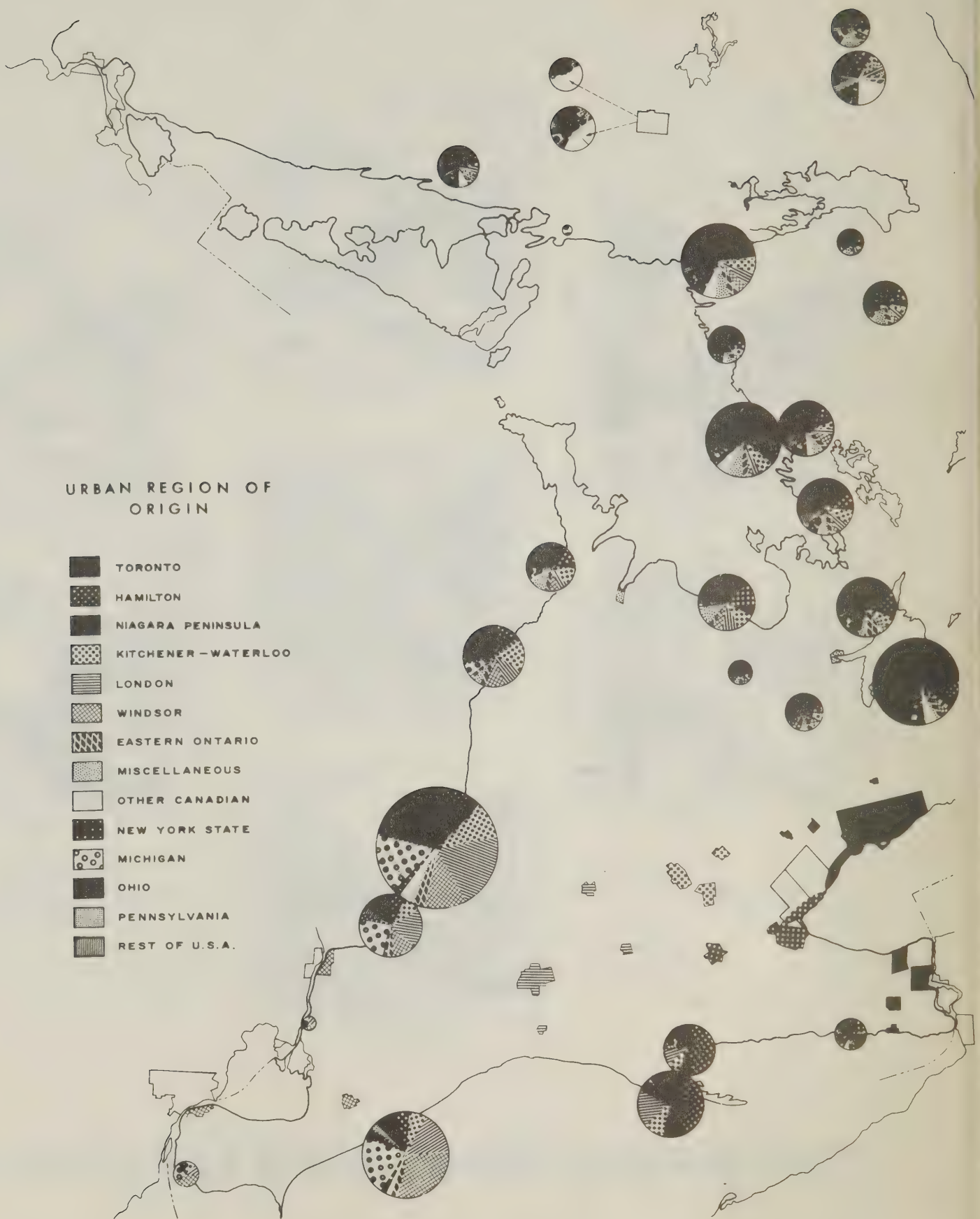
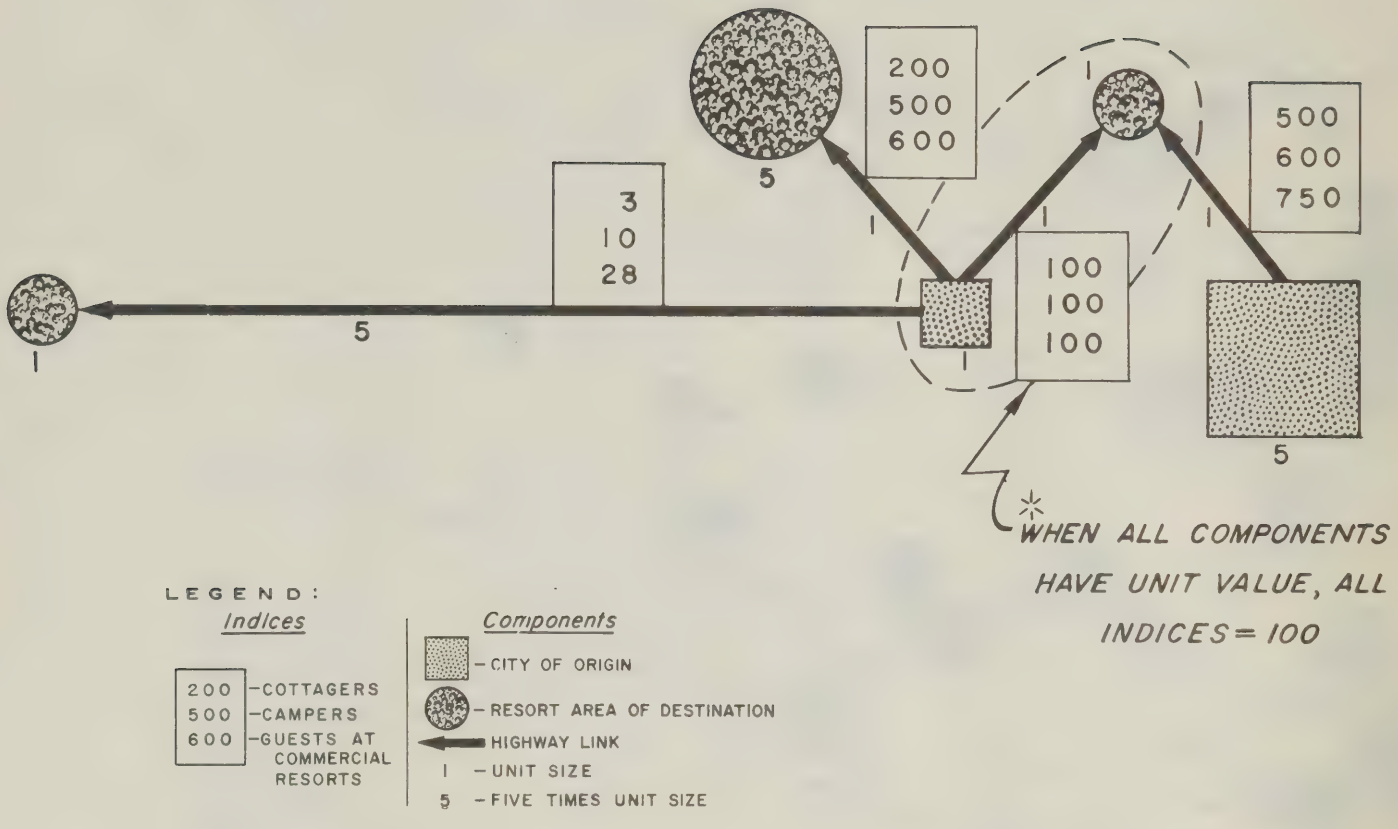


FIGURE 7, ORIGIN OF CAMPERS IN SOUTHERN

ONTARIO PROVINCIAL PARKS, 1963



INDICES CALCULATED ON THE BASIS OF THE EXPONENTS FOR THE FORMULA $V_{ij} = K\frac{P^{P_{ij}}\ C^{C_j}}{D^{d}_{ij}}$

	P	C	d
COTTAGERS	1·02	0·35	2·22
CAMPERS	1·12	1·03	1·45
COMM. GUESTS	1·27	1·10	0·95

REFER TO TABLE 3 FOR EXPLANATION

FIG. 8, INDICES OF RECREATIONAL TRAVEL RESULTING FROM FIVEFOLD CHANGE IN EACH COMPONENT*

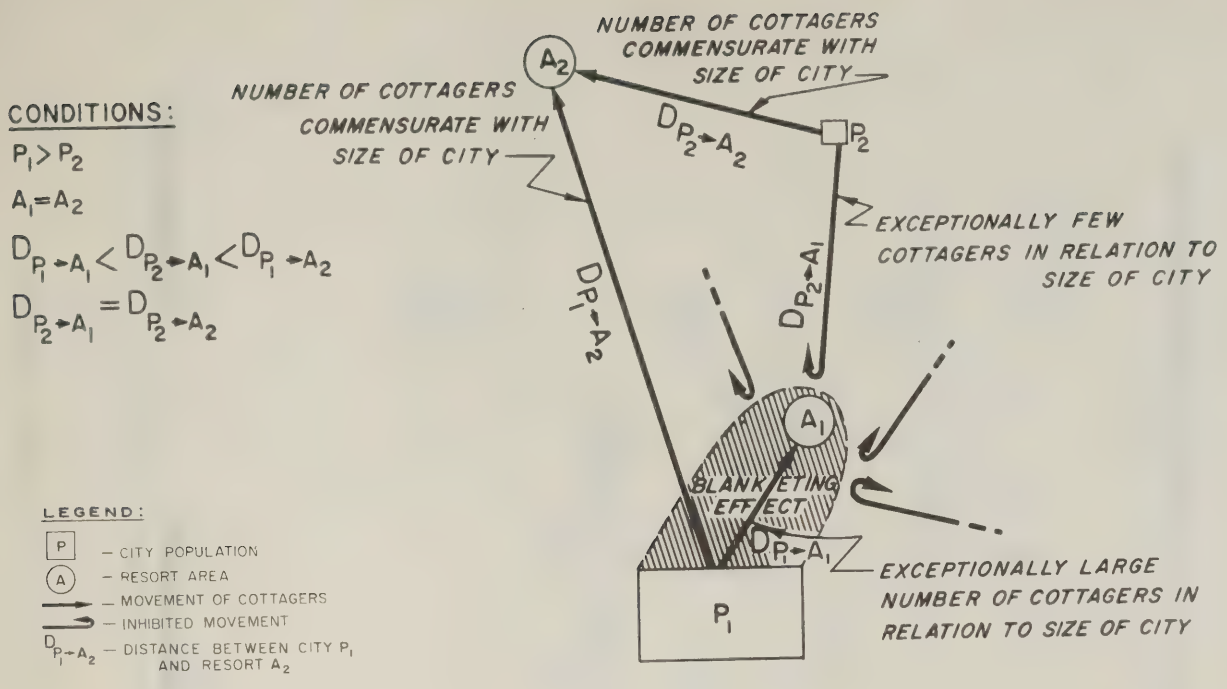


FIG. 9, DISTORTIONS INTRODUCED INTO RECREATIONAL TRAVEL BY THE BLANKETING EFFECT OF A LARGE CITY

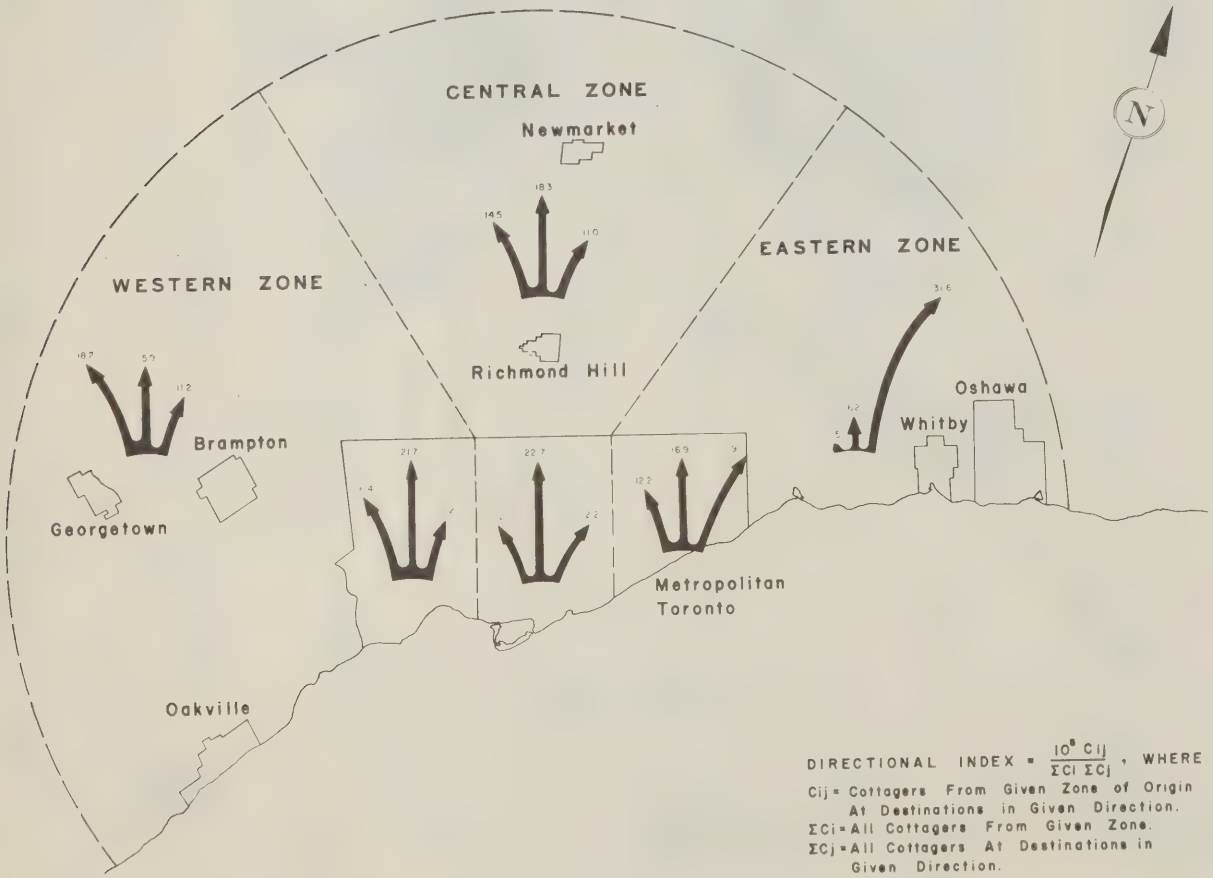


FIG. 10, DIRECTIONAL MOVEMENT OF COTTAGERS FROM THE METROPLITAN TORONTO REGION, 1963

FIG. 11, PERCENTAGE OF POPULATION IN MUNICIPALITIES OF SOUTHERN ONTARIO OWNING COTTAGES SERVED BY HYDRO, 1963

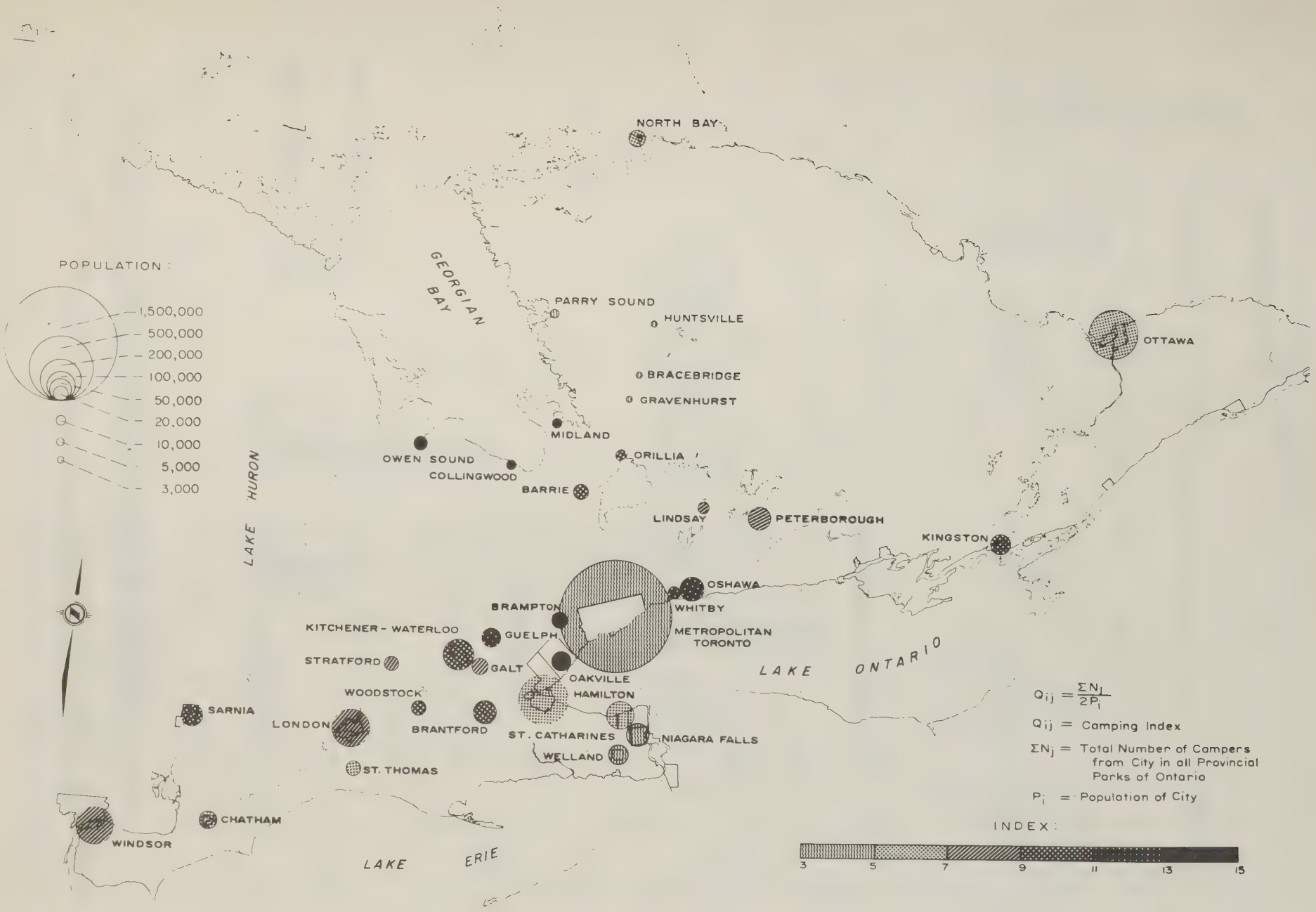
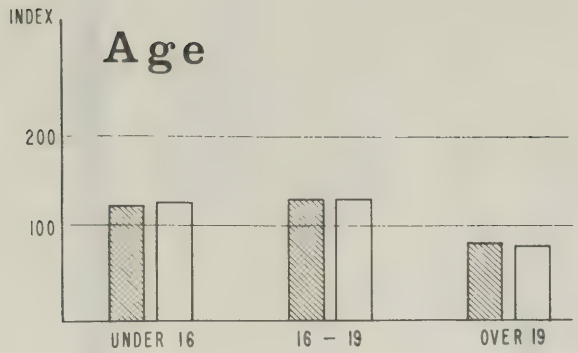
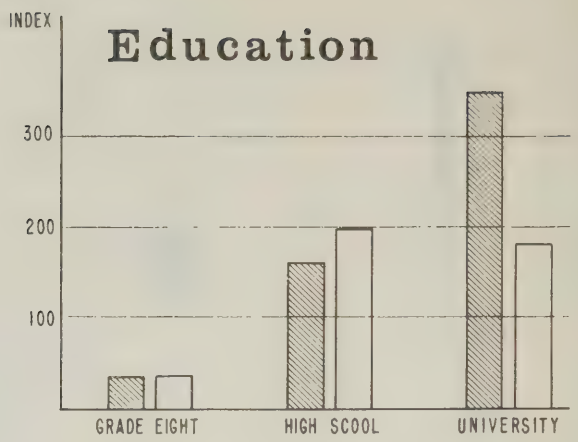
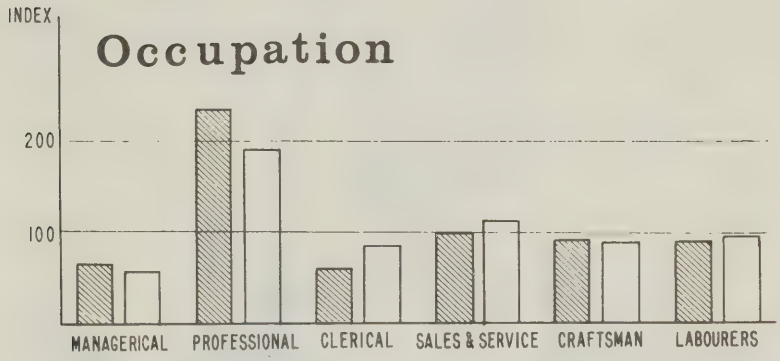
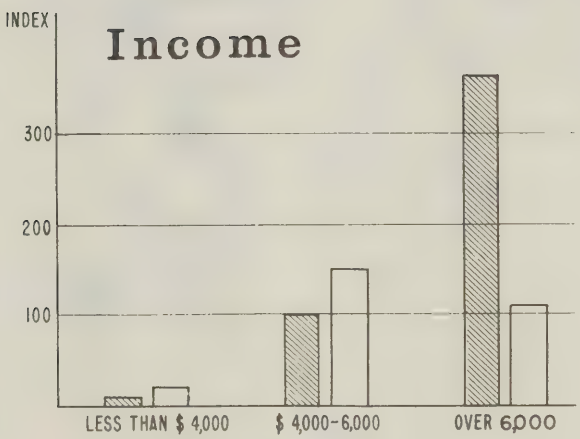


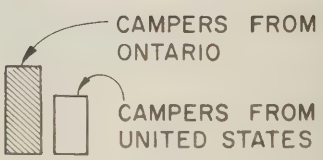
FIG. 12, CAMPING INDICES OF THE CITIES OF SOUTHERN ONTARIO











$$\text{INDEX} = \frac{\text{PERCENTAGE OF CAMPERS EXHIBITING GIVEN ATTRIBUTE}}{\text{PERCENTAGE OF URBAN POPULATION EXHIBITING GIVEN ATTRIBUTE}} \times 100$$

EXAMPLE: 27.5 % OF CAMPERS HAVE GONE TO UNIVERSITIES
7.9 % OF THE URBAN POPULATION OF ONTARIO HAVE GONE TO UNIVERSITIES

$$\text{EDUCATIONAL INDEX (ONTARIO)} = \frac{27.5}{7.9} \times 100 = 348$$

FIG. 13, CAMPERS IN ONTARIO : INDICES OF PARTICIPATION, 1965

APPENDIX 'A', TYPICAL EXAMPLE OF INTERVIEW DATA FORM

SURVEY OF RESORT GUESTS' TRAVEL HABITS

A. IDENTIFICATION

Name of Resort _ _ _ _ _ _ _ _ _ _ _ _ _ _
Location (Rd.) _ _ _ _ _ _ _ _ _ _ _ _ _ _
Lake _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
Date _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
Resort Area _ _ _ _ _ _ _ _ _ _ _ _ _ _
Township _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
Interviewer _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
Type of Resort - AP (1) HK (2) EP (3)

	CODE	A
Card Control	☐	1
Serial Code	☐☐☐	2
Interview Code	☐	3
Resort Area Code	☐☐	4
Township Code	☐☐☐	5
Interviewer Code	☐	6
	☐	7

Repeat A1-6 on ea. card

B. TRAFFIC DATA

1. Origin: St. _ _ _ _ _ _ _ _ _ _ _ _ _ _ City _ _ _ _ _ _ _ _ _ _ _ _ _ _

2. Composition of party:

	M/F		M/F		M/F
1-4	_ _ _	20-24	_ _ _	55-64	_ _ _ _
5-9	_ _ _	25-34	_ _ _	65-69	_ _ _ _
10-14	_ _ _	35-44	_ _	over 70	_ _ _ _
15-19	_ _ _	45-54	_ _ _		

3. Length of trip (miles):

under 25	(1)	150-199	(6)
25-49	(2)	200-299	(7)
50-74	(3)	300-500	(8)
75-79	(4)	over 500	(9)
100-149	(5)	A. _ _ _ _ _	

4. Length of trip (hours):

Under 0.5	(01)	4.0-4.4	(09)
0.5-0.9	(02)	4.5-4.9	(10)
1.0-1.4	(03)	5.0-5.4	(11)
1.5-1.9	(04)	5.5-5.9	(12)
2.0-2.4	(05)	6.0-6.9	(13)
2.5-2.9	(06)	7.0-7.9	(14)
3.0-3.4	(07)	8.0-10	(15)
3.5-3.9	(08)	over 10	(16)

A. _ _ _ _ _ _

5. Routes taken to this place:
_ _ _ _ _ _ _ _ _ _
_ _ _ _ _ _ _ _ _ _
_ _ _ _ _ _ _ _ _ _

6. Why these routes:

shortest mi.	(1)	scenic	(5)
fastest time	(2)	prior	
avoid traffic	(3)	dest.	(6)
safest	(4)	recomm.	(7)
other (8) _ _ _ _ _			

7. Is this final destination:
Yes (1) No (2)

8. If no; where:
City _ _ _ _ _ _ _ _ _ _ _ _ _ _

9. Distance from here (miles):

under 25	(1)	150-199	(6)
25-49	(2)	200-299	(7)
50-74	(3)	300-500	(8)
75-99	(4)	over 500	(9)
100-149	(5)	A. _ _ _ _	

10. Did you plan to stop here:
Yes (1) No (2)

11. Heard of this resort from:

friends	(1)	live near	(5)
driving around	(2)	T. and I.	(6)
private ad.	(3)	came as	
Govt. ad.	(4)	child	(7)
other (8) _ _ _ _ _			

12. Have you been here before:
0 (1) 3 (4) over 5 (7)
1 (2) 4 (5)
2 (3) 5 (6) A. _ _ _ _

	Card 1	B
	☐☐☐☐	1
	☐☐☐☐	2
	☐	3
	☐☐	4
	☐☐☐☐	5
	☐☐	6
	☐	7
	☐☐☐☐	8
	☐	9
	☐	10
	☐☐	11
	☐	12

13. Length of stay (days):
1 (1) 4 (4) 11-15 (7)
2 (2) 5 (5) 16-21 (8)
3 (3) 6-10 (6) over 21 (9)

14. Length of vacation (weeks):
1 (1) 5-8 (5)
2 (2) over 8 (6)
3 (3) retired (7)
4 (4)

15. Last year's vacation:

a) cottage	(1)	b) Ont.	(1)
AP resort	(2)	W. Can.	(2)
HK resort	(3)	E. Can.	(3)
camping	(4)	U. S.	(4)
family		Mex.	(5)
scatters	(5)	Eur.	(6)
other____	(6)	other	(7)

13 ☐
14 ☐
15 ☐☐

16. Provincial highways:
better than expected (1)
average (2)
below average (3)
poor (4)

19. Local roads (twp., county):
better than expected (1)
average (2)
below average (3)
poor (4)

16 ☐
17 ☐

17. Problems: Yes (1) No (2)

20. Problems: Yes (1) No (2)

18 ☐☐☐☐

18. If yes:

width	(01)	construction	(06)
surface	(02)	congestion	(07)
curves	(03)	poor scenery	(08)
intersections	(04)	speeding	(09)
maintenance	(05)	signs	(10)
		other	(11)

Card 2
19 ☐
20 ☐

21. If yes:

width	(01)	construction	(06)
surface	(02)	congestion	(07)
curves	(03)	poor scenery	(08)
dust	(04)	speeding	(09)
maintenance	(05)	signs	(10)
		other	(11)

21 ☐☐☐☐

C. RESORT DATA

C

1. Cost of accom./day/party:
0-5 (1) 21-30 (5)
6-10 (2) 31-40 (6)
11-15 (3) 41-50 (7)
16-20 (4) over 50 (8)

1 ☐

3. Activities and facilities:

boating	(01)	golf & tennis	(08)
swimming	(02)	badm. & hs. sh.	(09)
water ski.	(03)	social (dance,	
sailing	(04)	etc.)	(10)
fishing	(05)	hobby (photo.)	(11)
riding	(06)	sightseeing	(12)
hiking	(07)	fam. gath. place	(13)
		relaxation	(14)
		other	(15)

2 ☐☐☐☐

2. Why did you choose this resort:

seclusion	(1)	close to facil.	(7)
close to water (boating etc.)	(2)	came as child	(8)
close to home	(3)	ad in paper	(9)
friends (social)	(4)	driving around	(10)
beach	(5)	other	(11)
fishing	(6)		

3 ☐☐☐☐

4. Desired non-available facilities:

shopping	(1)	dining improvements	(6)
recreation	(2)	accom. improvements	(7)
marine fac.	(3)	LCBO licence	(8)
public wks.	(4)	other	(9)
fish stocking	(5)		

4 ☐☐☐

C. RESORT DATA (continued)

5. Undesirable facilities; □□□□ 5
   - dense com. dev. (1)
   - shopping (2)
   - dense cot. dev. (3)
   - marine act. (4)
   - parks-camping (5)
   - clientele (6)
   - other (7)

D. SOCIO-ECONOMIC DATA D

1. Type of origin residence: □ 1
   - single detached (1)
   - attached (row, maison.) (2)
   - duplex (3)
   - apt. (4)
   - room (5)

2. Occupation: □□ 2
   - managerial (1)
   - prof. & tech. (2)
   - teaching (3)
   - clerical (4)
   - sales (5)
   - serv. & rec. (6)
   - transpn. & com. (7)
   - primary (8)
   - craftsman (9)
   - labourer (10)

3. Education: □ 3
   - compl. p. s. (1)
   - some hi. s. (2)
   - compl. hi. s. (3)
   - some U. (4)
   - comp. U. (5)
   - p. grad. (6)
   - no ans. (7)

4. Income □ 4
   - under 3,000 (1)
   - 3-4,999 (2)
   - 5-5,999 (3)
   - 6-6,999 (4)
   - 7-7,999 (5)
   - 8-9,999 (6)
   - 10-12,000 (7)
   - over 12 (8)
   - no ans. (9)

5. Birth (Canadian): □ 5
   - Yes (1)
   - No (2)
   - American (3)
   - no answer (4)

7. When did you come to Canada: □□ 6
   - Pre WWII (1)
   - WWII (2)
   - 1946-50 (3)
   - 1951-55 (4)
   - 1956-60 (5)
   - 1961-65 (6)
   - no ans. (7)

6. If "No": □ 7
   - Br. Is. (01)
   - French (02)
   - German (03)
   - Italian (04)
   - Neth. (05)
   - Pol. (06)
   - Russ. (07)
   - Scand. (08)
   - Ukrain. (09)
   - Other Eu. (10)
   - Asiatic (11)
   - Other (12)
   - no ans. (13)

8. Childhood spent in: □ 8
   - Metropolis (over 1 m.) (1)
   - Big city (250,000-1 m.) (2)
   - Med. city (50,000-250,000) (3)
   - Small city (10,000-50,000) (4)
   - Town (1,000-10,000) (5)
   - Village (under 1,000) (6)
   - Farm (7)

9. First move to city: □ 9
   - father (1)
   - grandfather (2)
   - grt. grandfather (3)
   - grt. grt. gran. (4)
   - further back (5)
   - no answer (6)

10. Getting back to nature:
    - Yes (1)
    - No (2)

□ 10

11. Why did you choose a commercial-resort vacation in preference to some other type of vacation: _____ □ 11

12. ADDITIONAL COMMENTS OF INTERVIEWEE. _____